

# Speech of Prof. G. Robert Blakey

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Mr. Justice Holmes once observed that the first requirement of a theory is that it fit the facts. He didn't add it, but I suppose he would not object if I said what he really meant was, the first requirement of a good theory was that it fit all the facts, and not just some of the facts. One of the great problems with the Kennedy case is that people have taken some of the facts and fit them to a particular theory and suggested that it was the truth.

What really happened in Dealey Plaza on November 22, 1963, is a very troublesome question, because what happened there not only happened in Dallas, it happened in Washington. I dare say that there are very few of you who could not tell me if I asked you where you were that day. Some of you that are a little older could probably tell me where you were December 7, too. Those two days we remember.

My problem when I got down to the committee some 18 months ago was how to figure out what, if anything, a congressional committee, not a grand jury, not an executive police agency, could add to the tragedy, except complicate it. I recognize, as I'm sure many of you do, that fact-finding 15 years after an event is difficult if not impossible. As I am sure you would remember or at least think you remember where you were on November 22, ask yourself honestly, are you telling me where you were or are you now telling me the story that you tell about where you were? Now that story is not false. It normally has a meaning to it and that simple meaning is true, but over time the details change. So one of the first things we faced in an effort to try to find out what happened in Dealey Plaza is that the witnesses' testimony was no longer valid. Frankly, it offered little hope of settling very difficult questions. Consequently, we hit on a strategy of looking not to people but to science and files.

Let me speak for a moment about files first. There is a myth, I suppose actually promulgated by the investigative agencies, that they know everything. It is widely believed that the truth about the Kennedy assassination is somehow locked up in the FBI, or more particularly in the CIA's files. One of the first things we found, my friends at the CIA will forgive me if I say it publicly, is that the reason they classify information is not to hide it from you, but rather to hide how little they know both from us and the Russians. The answer to the Kennedy case is

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not in the CIA files. We ranged wide and deep in those files. The agency gave the Select Committee on Assassinations unprecedented access to their materials and to their people. We had a similar access with the Federal Bureau of Investigation and a number of other agencies.

Let me talk to you a little bit about the science and what is involved. The official explanation for Dealey Plaza was that the president was shot at, perhaps three times, certainly two times, in a space of 7.9 seconds. All of the shots were fired by a man named Lee Harvey Oswald. Two of the shots hit President Kennedy; one shot actually hit both President Kennedy and Governor Connally. There was no evidence of a conspiracy. Now the phrase "no evidence of a conspiracy" was obviously written by a Philadelphia lawyer, because the phrase before "no evidence" was "no credible evidence," which would clue most of you to the fact that there was some evidence, which the commission for one reason or another rejected.

What did we find? We found that there were four, not three shots fired. That the first shot was fired from the Depository and that it missed. The evidence for that, and I will speak today primarily, if not exclusively, in terms of scientific evidence, is a film made by a man named Abraham Zapruder who ironically actually filmed the assassination as it occurred. In Zapruder's film you can see John Connally sitting in the car and he turns slightly to his right and then he turned very quickly, again. Connally's testimony to the Warren Commission and to the Select Committee on Assassinations was that he heard the first shot. That testimony, that oral testimony, was rejected by the Warren Commission. It had been accepted by the Select Committee on Assassinations, in part because the film sees John Connally turning, but more significantly, as I am sure many of you know, the Select Committee on Assassinations subjected a tape made by the Dallas Police Department, inadvertently, of the sounds of the assassination to some sophisticated acoustics analysis, and we can tell you that there were 7.9 seconds from the first to the fourth shot and you can count back in the film the correct number of frames and indeed see the shot go off in the sense that you can see in the film reactions to the first shot.

The second shot did, as the Warren Commission suggested, hit the president in the back of the neck, exit his throat, go into John Connally's back, exit his chest, hit his wrist, and then hit his thigh. The same bullet inflicted both wounds. This is the

so-called "single bullet" theory. The Warren Commission suggested this. It has and had been widely objected to by the critics. If there is anything that flows from the Select Committee's work, it is that the reality of the "single bullet" has been established beyond all reasonable doubts on the following grounds:

You can align Governor Connally and the president up using sophisticated techniques of interpreting the film. We located exactly where they were, I mean literally to the centimeter in Dealey Plaza. We located the two bodies. Using the forensic pathologists, we located where on the bodies the wounds were. We then had a NASA engineer trace out from Governor Connally's back through the president's neck and out the back of his neck, aligned based on the possible trajectory of the bullet and it intersects ... in a circle about like this ... on the sixth floor Depository window. The plus or minus of the trajectory is about 14 feet. Nevertheless, it established the reality of the possibility of the single bullet having come from the Depository.

In addition, ballistics tests show that the bullet found on the stretcher, probably Governor Connally's stretcher in Parkland Hospital, came from Oswald's rifle. Neutron activation analysis establishes that the bullet, in fact, hit Governor Connally's wrist. The bullet that hit Governor Connally's wrist was tumbling when it went through Governor Connally. You can tell that from the nature of the wound on the back of him. The only thing between President Kennedy and Governor Connally and the window from which the bullet was fired, was the president. The "single bullet" theory is correct.

The third bullet — and this is the area of some controversy — was not fired from the Depository, as the Warren Commission thought; it was fired from the so-called grassy knoll, an area off to the right of the president as he drove down Elm Street. This was a somewhat surprise finding by the committee — surprising, I suspect, to the public, who only became aware of it in December when it was announced. It is one of those things that, I suppose, will become a myth that the committee did this at the last moment. In point of fact, the committee had been wrestling with the implications of the acoustic study since sometime in July and August when we began to perceive that a careful study of the tape that we found would indicate that there were more than the required three shots, required in the sense of sustaining the Warren Commission's analysis.

Let me talk to you a little bit about the tape because it is an essential part of the analysis.

A policeman by the name of H.B. McLain — unknown to H.B. McLain — was traveling about 120 feet behind the presidential limousine on the left. The Harley-Davidson motorcycle that he had had a habit of having its microphone stuck. Indeed, it was stuck that day. He was also on the wrong channel, unknown to him. He was on Channel 1 when he should have been on Channel 2. And the microphone was stuck, as history would have it, during the period of the assassination. And consequently his microphone picked up not only the sound of his motorcycle but the sounds of the bullets being fired in Dealey Plaza.

For a long time the fact of that tape was known, and it was suggested by critics that someone in the

Dallas Police Department was involved somehow, in some way, with the assassination. An effort had been made to block the communication's channel by depressing the microphone button. This allegation led us to find the tape we did. It was in the possession of a former Assistant Chief in Dallas. We sent it to a firm in Massachusetts, named Bolt, Beranek & Newman, which counts among its endeavors working with sonar. They are able under water to locate and distinguish whales and submarines halfway across the Atlantic.

In addition, Dr. Barger says I shouldn't talk about this too much, but since it's not classified, as far as I'm concerned I'll share it with you. They apparently make a little black box that you put on a howitzer on a battlefield, and when the other side shoots at you the little black box tells you where the other howitzer is. So you shoot back exactly where they are. One of the things that led us to go to Dr. Barger's firm was the assumption that if he could find a howitzer on a battlefield, he ought to be able to find a rifle in Dealey Plaza.

In any event, Dr. Barger subjected the tape to very sophisticated analysis eliminating background noise throughout the whole tape. Ironically, however, the crucial sounds were sufficiently clear that the filter process turned out to be not necessary, although we spent about \$50,000 on the filtering process. Incidentally, he told us it was not necessary after we spent it and not before.

When Dr. Barger appeared before the committee on September 11th, his analysis of the product of a reconstruction of the shooting in Dealey Plaza that he had conducted in August had only been finished for approximately six to seven days. Consequently, at that time, he was only willing to estimate a probability about being mistaken on that third shot at 50-50.

Following his appearance in September, we had some separate consultants take a look at the basic data and do a mathematical extension of it. That mathematical extension can be fairly simply explained. Dealey Plaza is an urban environment, composed of large structures. If a sound is made by a rifle and there is a microphone in that environment, the first sound that comes from the rifle will reach the microphone directly. Indirect sound, or echoes, will bounce off all of the major structures in that environment and bounce back to the microphone. If you can visualize in your minds for a moment the first sound going to the rifle as one line of a triangle and the other two sides being created by the direct line to the building and then the direct line back to the microphone you have a triangle. Imagine if you will the sound that occurs in Dealey Plaza. It does not sound like a bang. It sounds like bang, bang, bang, bang [i.e., dying away] until all of the echoes have hit off the buildings. And we have constructed a number of triangles in Dealey Plaza. Each triangle is unique as to the distance between the rifle, the building and the microphone as a function of the temperature of the air. It is possible to plot each of those triangles. If you can imagine in your mind for a moment a very complicated doodle, that doodle, composed of one superimposed triangle after another, actually amounts to a fingerprint of the sound in that urban environment, unique to that urban environment. What Professors Weiss and Aschkenasy were able to do for us in the period after

September was to perfect that fingerprint of sound that was on the tape taken in 1963 by the Dallas PD inadvertently and match it to the fingerprint of the sound that we had reconstructed in Dealey Plaza in August of 1978. And when that match occurred, it occurred to a degree of certainty of 95% plus.

We asked them, obviously, somewhat in disbelief or at least incredulously, "How could this have been done, or could we have been mistaken here between what you say is a rifle shot and a backfire?" And their answer is, "Yes, but the motorcycle would have to have been up on the grassy knoll behind the wooden fence to the left." We asked them, "Could this sound have come from another place?" There is another sound on this tape, for example, the sound of a carillon bell. And there is no bell in Dealey Plaza. "Could this sound have come from another source?" And the answer is yes. And Professor Aschkenasy put it very well, he said, "But tell me where it came from, and I will go there and I will find someplace else that looks precisely like Dealey Plaza."

What they told us in effect was that the construction of triangles that they found on the tape in 1963 is identical, 95% plus, to the construction of sound on the 1978 tape. In addition, there is more than what could be a loud noise. There is preceding the loud noise what is called an N-wave. When a supersonic rifle or pistol is fired, the first sound is that of a muzzle blast that you can observe, preceding that muzzle blast is the supersonic missile. Much like an airplane flying at the speed of sound, has a sonic boom with it, there is an audible sonic boom. So actually a rifle goes ... (snap, snap) ... and then it hits. You can see that initial snap on this tape. So whoever fired at the president from the grassy knoll fired a supersonic gun. I don't say rifle or pistol, because in fact any number of pistols available to the general public in 1963 could have been used. Clint Eastwood shoots a .44 Magnum. I don't suggest that he shot at the president; nevertheless, had he fired a .44 Magnum at the president it would have made the same sort of trail. Once we learned that it could have been a pistol and not a rifle, we quickly asked is it possible that a policeman in that area could have accidentally discharged his pistol. And the answer is that the nature of the N-wave and the muzzle blast that follows behind it permits you to determine the general direction of the shot. We know, for example, that it was not fired away from the grassy knoll back towards the railroad. We know that it was not fired directly up in the air. It was indeed fired at the general area of the presidential limousine. And that would lead one to suppose that this was not fired accidentally and the fact that he would have been a policeman would have been irrelevant to determining a number of things.

There is ironically a photograph taken by a woman standing across the street at the moment, within a second, of when the shot was fired. And it includes the presidential car, President Kennedy is leaning forward, and it includes the relevant area of the fence where the second assassin had to have been standing. We knew this. We looked very carefully at that film, and I have to report to you unfortunately that film was taken with a Polaroid camera, and in the 15 years following the assassination the film has deteriorated to the point now where some of the kinds of sophisticated computer enhancement that we

were able to do with the other films is, our experts tell us, not a profitable venture, and we did not make it. Nevertheless, ironically, at the very point on the film of the fence, where our acoustics people tell us the assassin had to be standing, there is an irregularity, which if you take a conspiratorial Rorschach test you will identify as an assassin. If you don't take the test that way you will say it's an irregularity in the film. The committee made no judgment on what it was. In fact I think it feels its presence is more significant in the sense in which it is not absent. If that fence had looked awfully regular at that point, and had not had an irregularity there, it would have been one little piece of evidence that would have perhaps been inconsistent with the acoustics.

When the acoustics came in we also asked ourselves, "Wait a minute, you've got a gunman firing from the grassy knoll? There were hundreds of people in that plaza that day. Who among them heard it? Who among them saw it? What evidence beyond science gives it support?" Most of us were skeptical lawyers and not trained scientists, therefore we don't believe scientists much more easily than others.

There were 171 people interviewed out of the people in Dealey Plaza, that testified either to the FBI or to the Warren Commission that there were from two to four shots fired. Of that 171 that said there were two to four shots fired, 46 people said they were fired from the Depository. Twenty people said they were fired from the grassy knoll. The rest said either that they didn't know or that they were fired from someplace else. You can see what you have here. The Warren Commission, faced with that kind of testimony, decided, I think, in the absence of scientific collaboration for the oral testimony of shots coming from two different directions, that they would believe only the shots fired from the Depository.

Among the people who heard shots fired from the front as well as from the back, include a policeman riding to the left of Mrs. Kennedy. His testimony is unequivocal. "I heard a shot come over my shoulder. I heard a shot from up front and to the right of me." Another witness was a Secret Service agent riding on the car immediately behind the president.

On the grassy area, from which the grassy knoll name is taken, there were two people. Abraham Zapruder, you will recall that I mentioned that he took the film. His testimony is difficult to read or to understand, partly because of the obvious emotion that he expressed during his deposition. Nevertheless, from his testimony you can determine that he differentiated shots based on sound. One shot was not so loud, another "reverberated all around me." As indeed it would have if it had come over his shoulder.

A man named Newman, with his family, was literally standing on the grassy knoll between where the president was and where the other gunman shot. He dropped his family to the ground — and there is photographic evidence to corroborate this. And he said very clearly, "I knew that I was in the line of fire. It came from the garden area directly behind me."

Another man, named Holland, standing on the railroad pass under which the president was shortly

to drive, said he heard four shots. Two from up the street, two from down the street — by down the street he meant the grassy knoll — and he also said that he saw a puff of smoke coming from the grassy knoll. I was somewhat skeptical of that testimony the first time I read it, since I thought that they really didn't have smoking guns since they got rid of flintlocks. That tells you how little I know about ammunition. Apparently a rifle made today, if not cleaned properly (which would leave oil in the barrel), would indeed produce smoke. And consequently, seeing a puff of smoke over there may be difficult to believe but it's not impossible to believe.

The bullet that was fired from the grassy knoll did not hit the president. The medical testimony is unequivocal. There is no evidence of any bullet hitting the president from the front.

The fourth shot, fired this time again from the Depository, hit the president in the back of the head and came out the front. And the doctors tell me that the cause of death is two gunshot wounds. And I believe them from a medical point of view, but having seen the films and having also seen the autopsy films, my judgment at the moment is that the third shot fired by Lee Harvey Oswald from the Depository killed the president.

Let me comment to you and with you a little bit about the meaning of all this. It has been one of the most soul shattering experiences that I've ever had. I was, ironically, with Attorney General Kennedy on November the 22nd, 1963, in an organized crime section meeting. We all went home for lunch. He went with Bob Morgenthau out to Hickory Hill, and the president was killed, and the meeting never got back together again.

Consequently, going back to Washington to investigate this was, in a sense, coming back to where I started. Seeing the president in the Zapruder film, for example, with Mrs. Kennedy, you're immediately struck with what a beautiful person he was. So alive. So vibrant. So symbolic of a time and place in the 1960's. And then seeing him dead, as I have, laid out on a slab — and I don't suggest that any of you do — very troublesome.

In a personal sense that is some of what happened to me, but there ought to be broader things that we can say about what happened in Dallas.

We can't rewrite history. We can't bring John Kennedy back. But I can tell you that not one institution of my society served me well in 1963. And I'll be honest with you, the Select Committee on Assassinations ought to underline its report and say, "None were covered with glory, including this committee." As committees of Congress go, its early history is hardly one to be offered as a model. The FBI did not adequately investigate the case. Not as to who shot the president. The basic shooter investigation is superb. They did not investigate adequately the conspiracy. The CIA, what did they do for us? They did not adequately gather information before the assassination. The information they had after the assassination they did not share with the Warren Commission. The Warren Commission itself represented in many ways the best of our society. The Chief Justice was its chairman, lawyers who are today in all of the major firms in the United States

served on that commission, all of them served ably and well. They studied the case as best they could, arrived at their judgments in good faith, and were fundamentally wrong on the conspiracy question. And they made what in my judgment was a serious mistake, they stated their judgment in such a way as they mistrusted the American people. They should have said, "We've done the best we could, we know who shot the president, we're not sure whether others were involved." And then trusted it to the maturity of the American people to accept it as such. They didn't, and let enter into our society a kind of poison that has run through the body politic ever since. We call it Watergate today — a lack of credibility in governmental institutions. There are a lot of young people who have thought this case through who will never trust the government again and feel that they have been lied to.

If there is any message to take out of this case, it ought to be that. Not a hope that somehow we will be able to identify the other assassin on the grassy knoll. After 15 years that's probably unlikely. That there were two assassins there, I believe it, based on science, and I think you will too if you see the evidence I saw. And you can see it. It's not something you have to accept on faith. You can go redo what they did. We'll publish the charts and you can sit down with a hand calculator and refigure it. This is not something that is beyond anyone who has a high school or certainly a freshman college understanding of physics.

But the message we ought to carry away from it can be summed up in two words, "Never again." The next time this happens — and it will happen: one in four of our presidents has been shot at — I hope indeed people will have the courage and integrity to stand up and say, "I will pursue this as far as I can, and if I can't go all the way, because I am human, I will tell people of that." So the lesson I think you should take from it is Santayana's lesson, "Those who will not study the past are doomed to repeat it." I know Shaw comments on that, "That the only thing we learn from history is that we don't learn from history." I have to hope that Shaw is wrong. Thank you. □

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— Third, at least one water level indicator on the pressurizing system appears to have given a faulty reading, causing the technician to think the system was full of water when it was not. This made him think wrongly that the system was under control.

— Fourth, when the emergency core cooling system came on automatically, which only happens when things are seriously amiss, another automatic system designed to contain radioactive leaks failed to come into play. The NRC rules say that this leak containment system should switch on simultaneously with the emergency cooling system.

— Fifth and sixth, technicians in the control room turned off the emergency and the primary cooling pumps. They should have been left on. No one knows why they were stopped.

The NRC staff describes these and other technical blunders in considerable detail, but they did not explain why the public was not warned of the danger sooner. ... □